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(56) Documents cited
GB 2207787 A GB 2193359 A GB 2190525 A
GB 2141006 A GB 2102250 A EP 0270274 A2
EP 0247612 A2 WO 87/02165 A1

(58) Field of search
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(54) Security and information display

(57) An antipilferage tag includes microcircuitry enabling data communication between the tag and a host computer whenever the tag is interrogated by the host computer. The tag can be used for price display, stock control, theft detection and check-out price totalling.

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SECURITY AND INFORMATION DISPLAY

This invention relates to security and information display, in particular (but not exclusively) in relation to the sale of goods.

Antipilferage tags are known which operate on electromagnetic principles. Such tags are affixed, for example, to articles of merchandise which are displayed for sale in, for example, a retail store. The store (or other premises) is provided with a security gate system which is designed to detect the presence of a tag in the vicinity of any one of the gates; detection triggers an alarm indicating that an article of merchandise is being removed from the premises without proper authorisation. At the point of sale within the premises, suitable deactivating devices, or tag removal devices, are provided so as to enable goods properly purchased to be taken out of the store without triggering the alarm system.

Electronic price display systems are also known, which are generally designed to be interconnected with a host computer so as to enable (either directly or via a portable control unit) the display to be updated when, for example, a price change (such as a special promotion) occurs.

These systems generally comprise individual display units which incorporate microcircuitry. This microcircuitry enables communication between the host computer and each display unit through transmission of an address code, which address code is generally associated with a code, for example a bar code, corresponding to the item of merchandise to which the display unit relates. Price data may also be associated with the address code.

The functions of security tags and of electronic

price display systems have hitherto been perceived as distinct entities, without any intercorrelation between the two. We have appreciated, however, that a surprising number of benefits accrue from a system which incorporates both the security feature associated conventionally with antipilferage tags and the data processing and/or display functions of electronic price display systems.

According to one aspect of the present invention, there is provided an antipilferage tag characterised in that it includes means enabling data communication between said tag and a host computer whenever the tag is interrogated by said host computer. The data communication preferably takes place by means of a wireless link, such as an infra-red or radio frequency link. However, it will be noted that in some embodiments of this invention, directly wired links between a tag and a host computer may be employed.

The data may comprise an address code which relates to the article with which the tag is associated. In addition to this, the data may include price information relating to the article with which the tag is associated, and also other information relating to the state of the tag.

In embodiments in which price data is communicated, it is advantageous for the antipilferage to include an electronic display unit. This display unit may display price information, address code or other article identity information, or other information relating to the state of the antipilferage tag.

In addition to or instead of an electronic display, the tag may include a printed label bearing price and/or article identity information.

In currently preferred embodiments, the tag includes a mechanism whereby it may be removably

attached to items of merchandise. This mechanism is preferably adapted so as to be difficult to open by unauthorised persons, but to facilitate removal by authorised check-out staff at the sales point. Upon removal of the tag, it is advantageous for the tag to be placed in a "non-alert" status.

It is also desirable for the tag to generate an identity code, for example its address code, upon removal by authorised personnel. The identity code may then be transmitted to a host computer for stock movement and inventory records. Advantageously, price information data associated with the identity code may be retrieved via the host computer, or may be directly generated by the tag.

In addition to these stock control features, preferred embodiments of the invention may generate an alarm signal which may include an identity code so as to alert store staff to the fact that the tag has been illegally removed from its associated article or otherwise unofficially tampered with.

In a further embodiment, the tag may be adapted to generate an alarm signal which may include an identity code so as to alert store staff to the fact that the tag is crossing a predetermined boundary limit within the store without passing through a check-out or sales point, at which the tag may be deactivated by authorised staff.

In a particular embodiment, the tag is adapted to generate a response signal indicative of the status and location of the tag when polled by a host computer. This response signal may be used to verify the presence of the article associated with the tag within the store environment or within a predetermined region of the store environment.

Furthermore, this response signal may be used to locate the tag within predetermined zones within the

store.

Preferably, the response signal comprises an identity code. It is advantageous for each tag to be programmed with a unique identity code rather than an identity code which is generic to a particular class of article. This enables stock-taking to be accomplished by means of remote communication between tags in a store and a host computer, without the need to physically count the articles to which tags are attached. If two or more tags share an identity code, it is difficult, if not impossible, to distinguish between them, and remote stock-taking becomes impracticable.

Specifically, there is provided an electronic article surveillance tag which comprises means for releasable attachment of the tag to an article, wherein

i) the tag includes deactivatable means for generating an alarm signal in the event that the tag is conveyed through an interrogation zone without first having been deactivated;

ii) the tag is adapted to receive signals transmitted by wireless means from a host computer;

iii) the tag is programmable so as to be able to discriminate between different categories of said signals so that the tag, after being programmed, can respond to selected signals only, for example to signals specifically addressed to or relating to the article to which the tag is attached; and

iv) the tag is adapted to transmit data to a host computer when polled by the host computer through said signals irrespective of the location of the tag and of its condition of attachment to or detachment from an article at the time of polling.

An electronic article surveillance/retail merchandising system which includes a tag with features as described above may be used in four primary modes of

operation which may be separate or joint in any combination dependent upon the status of the enable and/or disable command structure in the tag or system software. These features complete:

i) price verification and/or display means;

ii) stock counting, verification and adjustment means;

iii) theft detection means; and

iv) check-out based price totalling means to prevent accidental or deliberate manual price entry errors and to obviate the need to remove the tag and enter the price into the check-out till separately.

Within these four modes of operation, the system may be used either in "active" mode, in which there is continuous or intermittent polling for tag presence; or in "passive" mode, in which there is continuous or intermittent listening for tag transmissions.

The construction of a tag according to this invention may be varied depending on its intended use. For example, a lightweight miniature unit with limited battery life and no electronic display may be suitable for attachment to delicate articles of merchandise such as blouses and the like. On the other hand, a larger unit with relatively long battery life, an electronic display unit and free case area for a descriptive printed label may be suitable for attachment to articles such as leather jackets or fur coats.

CLAIMS:

1. An antipilferage tag characterised in that it includes means enabling data communication between said tag and a host computer whenever the tag is interrogated by said host computer.

2. A tag as claimed in claim 1, wherein said data communication is via a wireless link.

3. A tag as claimed in 2, wherein said wireless link comprises modulated electromagnetic radiation.

4. A tag as claimed in claim 1, wherein said data communication occurs by direct coupling between said tag and said host computer.

5. A tag as claimed in any preceding claim, wherein said data comprises tag identification data and/or price information data and/or information relating to the state of the tag.

6. A tag as claimed in any preceding claim, wherein said tag includes an electronic display unit.

7. A tag as claimed in claim 6, wherein said electronic display unit is adapted to display tag identification data and/or price information data and/or information relating to the state of the tag.

8. A tag as claimed in any preceding claim, wherein said tag includes a mechanism whereby it may be removably attached to items of merchandise.

9. A tag as claimed in claim 8, wherein said mechanism is adapted so as to hinder removal of the tag by unauthorised persons, but to facilitate removal of the tag by authorised persons.

10. A tag as claimed in claim 8, wherein said tag is adapted to generate an identity code upon removal by authorised persons.

11. A tag as claimed in claim 8, wherein said tag is adapted to generate price information data upon removal by authorised persons.

12. A tag as claimed in any preceding claim,

wherein said tag is adapted to generate an alarm signal upon being removed or otherwise tampered with by unauthorised persons.

13. A tag as claimed in any preceding claim, wherein said tag is adapted to generate an alarm signal upon crossing a predetermined boundary limit within the store without first having been deactivated by authorised persons.

14. A tag as claimed in claim 12 or 13, wherein said alarm signal includes an identity code.

15. A tag as claimed in any preceding claim, wherein said tag is adapted to generate a response signal indicative of the status and location of the tag when polled by a host computer.

16. A tag as claimed in claim 15, wherein said response signal includes a tag identity code.

17. A tag as claimed in claim 16, wherein said response signal is used to locate the tag within predetermined zones within a store.

18. A tag as claimed in any preceding claim, wherein said tag is programmed with a unique identity code.

19. A tag as claimed in any preceding claim, wherein said tag includes a printed label bearing price and/or article identity information.

20. An electronic article surveillance tag which comprises means for releasable attachment of the tag to an article, wherein

i) the tag includes deactivatable means for generating an alarm signal in the event that the tag is conveyed through an interrogation zone without first having been deactivated;

ii) the tag is adapted to receive signals transmitted by wireless means from a host computer;

iii) the tag is programmable so as to be able to discriminate between different categories of said

signals so that the tag, after being programmed, can respond to selected signals only, for example to signals specifically addressed to or relating to the article to which the tag is attached; and

iv) the tag is adapted to transmit data to a host computer when polled by the host computer through said signals irrespective of the location of the tag and of its condition of attachment to or detachment from an article at the time of polling.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

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Relevant Technical fields

(i) UK Cl (Edition K) G4H (HNEC, HNEE, HNEM, HNP) H4L (LACA, LACB, LACD, LACE, LACF, LACP, LACX)

(ii) Int Cl (Edition)

Search Examiner
M J DAVIS

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search
5 AUGUST 1992

Documents considered relevant following a search in respect of claims 1-20

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2207787 A (BARKER) - whole document	1,20 at least
X	GB 2193359 A (MULTITONE) - whole document	1,20 at least
X	GB 2190525 A (KOZPONTI) - whole document	1,20 at least
X	GB 2141006 A (INTELLI-TECH) - whole document	1,20 at least
X	GB 2102250 A (TAG RADIONICS) - whole document	1,20 at least
X	EP 0270274 A2 (MERIDIAN) - whole document	1 at least
X	EP 0247612 A2 (SHARP) - whole document	1,20 at least
X	WO 87/02165 A1 (RAJ) - whole document	1,20 at least

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

&: Member of the same patent family, corresponding document.

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